[MS-ASTASK]:
ActiveSync Tasks Class Protocol Specification

Revision Summary

Date	Revision History	Revision Class	Comments
12/03/2008	1.0.0	Major	Initial Release.
04/10/2009	2.0.0	Major	Updated technical content and applicable product releases.
07/15/2009	3.0.0	Major	Revised and edited for technical content.
11/04/2009	4.0.0	Major	Updated and revised the technical content.
02/10/2010	5.0.0	Major	Updated and revised the technical content.
05/05/2010	6.0.0	Major	Updated and revised the technical content.
08/04/2010	7.0	Major	Significantly changed the technical content.
11/03/2010	7.1	Minor	Clarified the meaning of the technical content.
03/18/2011	7.2	Minor	Clarified the meaning of the technical content.
08/05/2011	8.0	Major	Significantly changed the technical content.

Table of Contents

1   Introduction

The ActiveSync Tasks Class Protocol enables the communication of task data between a mobile device and the server in the ActiveSync protocol.

Sections 1.8, 2, and 3 of this specification are normative and contain RFC 2119 language. Sections 1.5 and 1.9 are also normative but cannot contain RFC 2119 language. All other sections and examples in this specification are informative.

1.1   Glossary

The following terms are defined in [MS-GLOS]:

Coordinated Universal Time (UTC)
XML

The following terms are defined in [MS-OXGLOS]:

instance
recurrence pattern
recurring task
reminder
store
Wireless Application Protocol (WAP) Binary XML (WBXML)
XML element
XML namespace
XML schema
XML schema definition (XSD)

The following terms are specific to this document:

MAY, SHOULD, MUST, SHOULD NOT, MUST NOT: These terms (in all caps) are used as described in [RFC2119]. All statements of optional behavior use either MAY, SHOULD, or SHOULD NOT.

1.2   References

1.2.1   Normative References

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact dochelp@microsoft.com. We will assist you in finding the relevant information. Please check the archive site, http://msdn2.microsoft.com/en-us/library/E4BD6494-06AD-4aed-9823-445E921C9624, as an additional source.

[MS-ASAIRS] Microsoft Corporation, "ActiveSync AirSyncBase Namespace Protocol Specification".

[MS-ASCMD] Microsoft Corporation, "ActiveSync Command Reference Protocol Specification".

[MS-ASDTYPE] Microsoft Corporation, "ActiveSync Data Types".

[MS-ASWBXML] Microsoft Corporation, "ActiveSync WAP Binary XML (WBXML) Protocol Specification".

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997, http://www.rfc-editor.org/rfc/rfc2119.txt

[XML] World Wide Web Consortium, "Extensible Markup Language (XML) 1.0 (Fourth Edition)", W3C Recommendation, August 2006, http://www.w3.org/TR/2006/REC-xml-20060816/

[XMLNS] Bray, T., Hollander, D., Layman, A., et al., Eds., "Namespaces in XML 1.0 (Third Edition)", W3C Recommendation, December 2009, http://www.w3.org/TR/2009/REC-xml-names-20091208/

[XMLSCHEMA1] Thompson, H.S., Ed., Beech, D., Ed., Maloney, M., Ed., and Mendelsohn, N., Ed., "XML Schema Part 1: Structures", W3C Recommendation, May 2001, http://www.w3.org/TR/2001/REC-xmlschema-1-20010502/

1.2.2   Informative References

[MS-GLOS] Microsoft Corporation, "Windows Protocols Master Glossary".

[MS-OXGLOS] Microsoft Corporation, "Exchange Server Protocols Master Glossary".

1.3   Overview

This protocol describes an **XML** representation of task list data that is used for client and server communication as described in [MS-ASCMD]. The task list data is included in protocol command requests when task list data is sent from the client to the server, and is included in protocol command responses when task list data is returned from the server to the client.

1.4   Relationship to Other Protocols

This protocol describes the XML representation of tasks that are used by the command requests and responses that are described in [MS-ASCMD]. The protocol governing the transmission of these commands between the client and the server is described in [MS-ASCMD]. The **Wireless Application Protocol (WAP) Binary XML (WBXML)**, as described in [MS-ASWBXML], is used to transmit the XML markup that constitutes the request body and the response body.

All data types in this document conform to the data type definitions that are described in [MS-ASDTYPE]. Common **XML schema** elements used by other classes are defined in [MS-ASAIRS].

1.5   Prerequisites/Preconditions

None.

1.6   Applicability Statement

This protocol describes a set of **XML elements** that are used to communicate task data when using the commands described in [MS-ASCMD]. This set of elements is applicable when communicating task data such as the task name, start and due dates, and recurrence options and exceptions between a mobile device and a server. These elements are not applicable when communicating calendar, e-mail, note, contact, or document data between a mobile device and a server.

1.7   Versioning and Capability Negotiation

None.

1.8   Vendor-Extensible Fields

None.

1.9   Standards Assignments

None.

2   Messages

2.1   Transport

This protocol consists of a series of XML elements that are embedded inside of a command request or command response, as specified in [MS-ASCMD].

The XML markup that constitutes the request body or the response body that is transmitted between the client and the server uses Wireless Application Protocol (WAP) Binary XML (WBXML), as specified in [MS-ASWBXML].

2.2   Message Syntax

The markup that is used by this protocol MUST be well-formed XML, as specified in [XML].

This protocol defines XML schema elements for the **Task** class, which represents a task.

The XML schema for the **Task** class elements in the **Tasks** namespace is defined as follows, in accordance with the rules specified in [XMLSCHEMA1].

```
<?xml version="1.0" ?>
<xs:schema xmlns:tns="Tasks:" attributeFormDefault="unqualified"
elementFormDefault="qualified"
targetNamespace="Tasks:" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:airsyncbase="AirSyncBase:">
   <xs:import namespace="AirSyncBase" location="AirSyncBase.xsd" />
   <xs:element name="Subject" type="xs:string" />
   <xs:element name="Importance" type="xs:unsignedByte" />
   <xs:element name="UtcStartDate" type="xs:dateTime" />
   <xs:element name="StartDate" type="xs:dateTime" />
   <xs:element name="UtcDueDate" type="xs:dateTime" />
   <xs:element name="DueDate" type="xs:dateTime" />
   <xs:element name="Categories">
      <xs:complexType>
          <xs:sequence minOccurs="0">
            <xs:element maxOccurs="300" name="Category" type="xs:string" />
          </xs:sequence>
      </xs:complexType>
   </xs:element>
   <xs:element name="Recurrence">
      <xs:complexType>
        <xs:sequence>
           <xs:element name="Type" type="xs:unsignedByte" />
           <xs:element name="Start" type="xs:dateTime" />
           <xs:element name="Until" type="xs:dateTime" />
           <xs:element name="Occurrences" type="xs:unsignedByte" />
           <xs:element name="Interval" type="xs:unsignedByte" />
           <xs:element name="DayOfWeek" type="xs:unsignedByte" />
           <xs:element name="DayOfMonth" type="xs:unsignedByte" />
           <xs:element name="WeekOfMonth" type="xs:unsignedByte" />
           <xs:element name="MonthOfYear" type="xs:unsignedByte" />
           <xs:element name="Regenerate" type="xs:unsignedByte" />
           <xs:element name="DeadOccur" type="xs:unsignedByte" />
           <xs:element name="CalendarType" type="xs:unsignedByte" />
           <xs:element name="IsLeapMonth" type="xs:unsignedByte" />
           <xs:element minOccurs="0" name="FirstDayOfWeek">
                <xs:simpleType>
```

```
                    <xs:restriction base="xs:unsignedByte">
                            <xs:minInclusive value="0"/>
                            <xs:maxInclusive value="6"/>
                    </xs:restriction>
                </xs:simpleType>
            </xs:element>
        </xs:sequence>
    </xs:complexType>
</xs:element>
<xs:element name="Complete" type="xs:unsignedByte" />
<xs:element name="DateCompleted" type="xs:dateTime" />
<xs:element name="Sensitivity" type="xs:unsignedByte"  />
<xs:element name="ReminderTime" type="xs:dateTime" />
<xs:element name="ReminderSet" type="xs:unsignedByte" />
</xs:schema>
```

The portion of the **AirSyncBase** namespace that is used by the **Task** class is defined as follows. For details about the complete **AirSyncBase XSD**, see [MS-ASAIRS] section 2.2.

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:airsyncbase="AirSyncBase:" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns="AirSyncBase:" targetNamespace="AirSyncBase:" elementFormDefault="qualified"
attributeFormDefault="unqualified">
    <xs:element name="Body"/>
</xs:schema>
```

2.2.1   Namespaces

This specification defines and references various **XML namespaces** using the mechanisms specified in [XMLNS]. Although this specification associates a specific XML namespace prefix for each XML namespace that is used, the choice of any particular XML namespace prefix is implementation-specific and is not significant for interoperability.

Prefix	Namespace URI	Reference
airsyncbase	**AirSyncBase**	[MS-ASAIRS]
(none)	**Tasks**	
airsync	**AirSync**	[MS-ASCMD] section 2.2.2.19
itemoperations	**ItemOperations**	[MS-ASCMD] section 2.2.2.8
search	**Search**	[MS-ASCMD] section 2.2.2.14
xs	**http://www.w3.org/2001/XMLSchema**	[XMLSCHEMA1]

2.2.2   Elements

Elements of the **Task** class are defined in two namespaces: **Task** and **AirSyncBase**. All **Task** class elements are specified in this document; however, elements defined in the **AirSyncBase** namespace are further specified in [MS-ASAIRS].

The following elements are top-level elements of the **Task** class:

- **airsyncbase:Body** (section 2.2.2.1)

- **Categories** (section 2.2.2.3)

- **Complete** (section 2.2.2.5)

- **DateCompleted** (section 2.2.2.6)

- **DueDate** (section 2.2.2.10)

- **Importance** (section 2.2.2.12)

- **Recurrence** (section 2.2.2.17)

- **ReminderSet** (section 2.2.2.19)

- **ReminderTime** (section 2.2.2.20)

- **Sensitivity** (section 2.2.2.21)

- **StartDate** (section 2.2.2.23)

- **Subject** (section 2.2.2.24)

- **UtcDueDate** (section 2.2.2.27)

- **UtcStartDate** (section 2.2.2.28)

Except where otherwise specified in the following sections, each top-level element of the **Task** class is used in ActiveSync command requests and responses as follows:

- As an optional child element of the **itemoperations:Schema** element ([MS-ASCMD] section 2.2.3.135) in **ItemOperations** command requests ([MS-ASCMD] section 2.2.2.8.2)

- As an optional child element of the **itemoperations:Properties** element ([MS-ASCMD] section 2.2.3.118.1) in **ItemOperations** command responses ([MS-ASCMD] section 2.2.2.8.3)

- As an optional child element of the **search:Properties** element ([MS-ASCMD] section 2.2.3.118.2) in **Search** command responses ([MS-ASCMD] section 2.2.2.14.2)

- As an optional child element of the **airsync:ApplicationData** element ([MS-ASCMD] section 2.2.3.10) in **Sync** command requests ([MS-ASCMD] section 2.2.2.19.1)

- As an optional child element of the **airsync:ApplicationData** element ([MS-ASCMD] section 2.2.3.10) in **Sync** command responses ([MS-ASCMD] section 2.2.2.19.2)

The following table summarizes the set of common XML schema element definitions defined in or used by this specification. XML schema element definitions that are specific to one or more particular operations are specified further in sections 3.1.5.1, 3.1.5.2, 3.1.5.3, 3.2.5.1, 3.2.5.2, and 3.2.5.3.

Element name	Description
airsyncbase:Body	The text for the task item.
Subject	The subject of the task item.
Importance	The importance or priority of the task item.

Element name	Description
UtcStartDate	The **Coordinated Universal Time (UTC)** start date of the task item.
StartDate	The local start date of the task item.
UtcDueDate	The UTC due date of the task item.
DueDate	The local due date of the task item.
Categories	A collection of user-selected labels assigned to the task.
Category (section 2.2.2.4)	One of the user-selected labels that has been applied to the task item.
Recurrence	When and how often this task recurs.
Type (section 2.2.2.25)	The recurrence type.
Start (section 2.2.2.22)	The start time of a series of recurrence items.
Until (section 2.2.2.26)	The end time of a series of recurrence items.
Occurrences (section 2.2.2.16)	The number of occurrences before the series ends.
Interval (section 2.2.2.13)	The interval between recurrences.
DayOfWeek (section 2.2.2.8)	The day of the week for the recurrence.
DayOfMonth (section 2.2.2.7)	The day of the month for the recurrence.
WeekOfMonth (section 2.2.2.29)	The week of the month for the recurrence.
MonthOfYear (section 2.2.2.15)	The month of the year for the recurrence.
Regenerate (section 2.2.2.18)	Whether the task item regenerates after each task **instance** is complete.
DeadOccur (section 2.2.2.9)	Whether the task is a recurring instance.
CalendarType (section 2.2.2.2)	The calendar system used by this recurrence.
IsLeapMonth (section 2.2.2.14)	Whether this recurrence takes place during a leap month.
FirstDayOfWeek (section 2.2.2.11)	Specifies which day is considered the first day of the calendar week for this recurrence.
Complete	Whether the task has been completed.
DateCompleted	The date on which the task item was completed.
Sensitivity	The sensitivity of the task item.
ReminderTime	The time and date at which the **reminder** for the task item will appear.
ReminderSet	Whether a reminder for the task item has been set to appear.

2.2.2.1 Body

The **airsyncbase:Body** element is a **container** ([MS-ASDTYPE] section 2.2) element that specifies the text for the task. It is defined as an element in the **AirSyncBase** namespace and is used in ActiveSync command requests and responses as specified in section 2.2.2.

For more details about the **airsyncbase:Body** element, see [MS-ASAIRS] section 2.2.2.4.

2.2.2.2 CalendarType

The **CalendarType** element<1> is a child element of the **Recurrence** element (section 2.2.2.17) that specifies the calendar system used by the task recurrence. It is defined as an element in the **Tasks** namespace.

The value of this element is an **unsignedbyte** data type, as specified in [MS-ASDTYPE] section 2.7.

A command request has a maximum of one **CalendarType** child element per **Recurrence** element when the **Type** element (section 2.2.2.25) is set to a value of 2, 3, 5, or 6. If the **CalendarType** element is included in other instances, the server responds with a status 6 error (conversion error).

A command response has a minimum of one **CalendarType** child element per **Recurrence** element when the **Type** element is set to a value of 2, 3, 5, or 6; otherwise, this element is optional in command responses.

The value of the **CalendarType** element MUST be one of the values listed in the following table.

Value	Meaning
0	Default
1	Gregorian
2	Gregorian (United States)
3	Japanese Emperor Era
4	Taiwan
5	Korean Tangun Era
6	Hijri (Arabic Lunar)
7	Thai
8	Hebrew Lunar
9	Gregorian (Middle East French)
10	Gregorian (Arabic)
11	Gregorian (Transliterated English)
12	Gregorian (Transliterated French)
14	Japanese Lunar
15	Chinese Lunar
16	Saka Era – This value is not supported; MUST not be used.

Value	Meaning
17	Chinese Lunar (Eto) – This value is not supported; MUST not be used.
18	Korean Lunar (Eto) – This value is not supported; MUST not be used.
19	Japanese Rokuyou Lunar – This value is not supported; MUST not be used.
20	Korean Lunar
23	Um al-Qura – This value is not supported; MUST not be used.

2.2.2.3 Categories

The **Categories** element is a **container** ([MS-ASDTYPE] section 2.2) element that specifies a collection of user-managed labels assigned to the task. It is defined as an element in the **Tasks** namespace and is used in ActiveSync command requests and responses as specified in section 2.2.2.

A command request or response has a maximum of one **Categories** element per command.

The **Categories** element can have the following child element:

▪ **Category** (section 2.2.2.4): This element is optional.

If a **Categories** element contains no **Category** child elements in a request or response, then the categories for the specified task have all been removed.

2.2.2.4 Category

The **Category** element is an optional child element of the **Categories** element (section 2.2.2.3) that specifies a category that is assigned to the task item, such as Business, Holiday, Personal, or Waiting. It is defined as an element in the **Tasks** namespace.

The value of this element is a **string** data type, as specified in [MS-ASDTYPE] section 2.6.

A **Categories** element SHOULD contain no more than 300 **Category** child elements.

2.2.2.5 Complete

The **Complete** element is a required element that specifies whether the task has been completed. It is defined as an element in the **Tasks** namespace.

The value of this element is an **unsignedbyte** data type, as specified in [MS-ASDTYPE] section 2.7.

The value of the **Complete** element MUST be one of the following values.

Value	Meaning
0	False (not completed)
1	True (completed)

2.2.2.6 DateCompleted

The **DateCompleted** element specifies the date and time at which the task was completed. It is defined as an element in the **Tasks** namespace and is used in ActiveSync command requests and responses as specified in section 2.2.2.

The **DateCompleted** element MUST be included in the response if the **Complete** element (section 2.2.2.5) value is 1.

The value of this element is a **dateTime** data type, as specified in [MS-ASDTYPE] section 2.3.

2.2.2.7 DayOfMonth

The **DayOfMonth** element is an optional child element of the **Recurrence** element (section 2.2.2.17) that specifies the day of the month for the task recurrence. It is defined as an element in the **Tasks** namespace.

The value of this element is an **unsignedbyte** data type, as specified in [MS-ASDTYPE] section 2.7.

A command request or response has a minimum of one **DayOfMonth** element per **Recurrence** element if the value of the **Type** element (section 2.2.2.25) is either 2 or 5.

A command request or response has a maximum of one **DayOfMonth** element per **Recurrence** element.

The **DayOfMonth** element MUST only be included in requests or responses when the **Type** element value is 2 or 5. When a request is issued with the **DayOfMonth** element in other instances, the server responds with a status 6 error (conversion error).

2.2.2.8 DayOfWeek

The **DayOfWeek** element is an optional child element of the **Recurrence** element (section 2.2.2.17) that specifies the day of the week for the task recurrence. It is defined as an element in the **Tasks** namespace.

A command request or response has a minimum of one **DayOfWeek** element per **Recurrence** element if the value of the **Interval** element (section 2.2.2.13) is 1, unless the **Type** element value is 0 (zero). If the **Type** element value is 0 (zero) and the **Interval** element value is 1, the **DayOfWeek** element is not a required child element of the **Recurrence** element.

A command request or response has a maximum of one **DayOfWeek** element per **Recurrence** element.

The value of this element is an **unsignedbyte** data type, as specified in [MS-ASDTYPE] section 2.7.

The value of the **DayOfWeek** element MUST be either one of the following values, or the sum of more than one of the following values (in which case this task recurs on more than one day).

Value	Meaning
1	Sunday
2	Monday
4	Tuesday
8	Wednesday

Value	Meaning
16	Thursday
32	Friday
64	Saturday
127	Specifies the last day of the month when the value of the **WeekOfMonth** element (section 2.2.2.29) is 5.

The **DayOfWeek** element MUST only be included in requests or responses when the **Type** element value is 0 (zero), 1, 3, or 6. When a request is issued with the **DayOfWeek** element in other instances, the server responds with a status 6 error (conversion error).

2.2.2.9 DeadOccur

The **DeadOccur** element is an optional child element of the **Recurrence** element (section 2.2.2.17) that specifies whether the task is an instance of a **recurring task**. It is defined as an element in the **Tasks** namespace.

The value of this element is an **unsignedbyte** data type, as specified in [MS-ASDTYPE] section 2.7.

A command request or response has a maximum of one **DeadOccur** child element per **Recurrence** element.

Clients set this value to any non-zero value (up to 255) to mark a task as a recurring task. Clients making command requests MUST set this value to a non-zero value (up to 255) when marking a task as complete.

The default value of the **DeadOccur** element is 0 (zero).

2.2.2.10 DueDate

The **DueDate** element specifies the local due date of the task item. It is defined as an element in the **Tasks** namespace and is used in ActiveSync command requests and responses as specified in section 2.2.2.

The value of this element is a **dateTime** data type, as specified in [MS-ASDTYPE] section 2.3.

2.2.2.11 FirstDayOfWeek

The **FirstDayOfWeek**<2> element is a child element of the **Recurrence** element (section 2.2.2.17) that specifies which day is considered the first day of the calendar week for this recurrence. It is defined as an element in the **Tasks** namespace.

The value of this element is an **unsignedbyte** data type, as specified in [MS-ASDTYPE] section 2.7.

A command request has a maximum of one **FirstDayOfWeek** child element per **Recurrence** element.

A command response has a maximum of one **FirstDayOfWeek** child element per **Recurrence** element. The server MUST return a **FirstDayOfWeek** element when the value of the **Type** element (section 2.2.2.25) is 1.

This element disambiguates recurrences across localities that define a different starting day for the calendar week. If this element is not included in the client request, then the server SHOULD identify

the first day of the week for this recurrence according to the preconfigured options of the user creating the calendar item.

The value of the **FirstDayOfWeek** element MUST be one of the values defined in the following table. If the client uses the **Sync** command request ([MS-ASCMD] section 2.2.2.19.1) to transmit a value not included in this table, then the server MUST return protocol status error 6. **Sync** command status values are specified in [MS-ASCMD] section 2.2.3.152.16.

Value	Meaning
0	Sunday
1	Monday
2	Tuesday
3	Wednesday
4	Thursday
5	Friday
6	Saturday

2.2.2.12   Importance

The **Importance** element specifies the importance or priority of the task item. It is defined as an element in the **Tasks** namespace and is used in ActiveSync command requests and responses as specified in section 2.2.2.

The value of this element is an **unsignedbyte** data type, as specified in [MS-ASDTYPE] section 2.7.

The value of the **Importance** element SHOULD be one of the following:

Value	Meaning
0	Low
1	Normal (Default)
2	High

If the **Importance** element is set to a value other than 0 (zero), 1, or 2 in a command request, the server will process the request successfully (that is, will not return an error code in the response).

2.2.2.13   Interval

The **Interval** element is an optional child element of the **Recurrence** element (section 2.2.2.17) that specifies the interval between task recurrences. It is defined as an element in the **Tasks** namespace.

A command request or response has a maximum of one **Interval** element per **Recurrence** element.

The value of the **Interval** element is an **integer**. The maximum value of this element is 999.

2.2.2.14 IsLeapMonth

The **IsLeapMonth** element<3> is an optional child element of the **Recurrence** element (section 2.2.2.17) that specifies whether the **recurrence patterns** should occur within the leap month of the current year. It is defined as an element in the **Tasks** namespace.

The value of this element is an **unsignedbyte** data type, as specified in [MS-ASDTYPE] section 2.7.

A command request has a maximum of one **IsLeapMonth** child element per **Recurrence** element.

A command response has a maximum of one **IsLeapMonth** child element per **Recurrence** element.

This element only applies when the **CalendarType** element (section 2.2.2.2) specifies a calendar system that incorporates an embolismic (leap) month. Examples include lunisolar calendar systems such as Hebrew Lunar and Chinese Lunar. This element has no effect when specified in conjunction with the Gregorian calendar.

The value of the **IsLeapMonth** element MUST be one of the following values.

Value	Meaning
0	False
1	True

The default value of the **IsLeapMonth** element is 0.

2.2.2.15 MonthOfYear

The **MonthofYear** element is an optional child element of the **Recurrence** element (section 2.2.2.17) that specifies the month of the year for the task recurrence. It is defined as an element in the **Tasks** namespace.

The value of this element is an **unsignedbyte** data type, as specified in [MS-ASDTYPE] section 2.7.

A command request or response has a minimum of one **MonthofYear** child element per **Recurrence** element if the value of the **Type** element (section 2.2.2.25) is either 5 or 6.

A command request or response has a maximum of one **MonthofYear** child element per **Recurrence** element.

The value of the **MonthofYear** element MUST be between 1 and 12.

2.2.2.16 Occurrences

The **Occurrences** element is an optional child element of the **Recurrence** element (section 2.2.2.17) that specifies the number of occurrences before the series ends. It is defined as an element in the **Tasks** namespace.

The value of this element is an **unsignedbyte** data type, as specified in [MS-ASDTYPE] section 2.7.

A command request or response has a maximum of one **Occurrences** child element per **Recurrence** element.

The **Occurrences** element and the **Until** element (section 2.2.2.26) are mutually exclusive. It is recommended that only one of these elements be included as a child element of the **Recurrence**

element in a **Sync** command request ([MS-ASCMD] section 2.2.2.19.1). If both elements are included, the server MUST respect the value of the **Occurrences** element and ignore the **Until** element.

2.2.2.17 Recurrence

The **Recurrence** element is a **container** ([MS-ASDTYPE] section 2.2) element that specifies when and how often the task recurs. It is defined as an element in the **Tasks** namespace and is used in ActiveSync command requests and responses as specified in section 2.2.2.

A command request or response has a maximum of one **Recurrence** element per command.

The **Recurrence** element can have the following child elements:

- **Type** (section 2.2.2.25): This element is required.

- **Start** (section 2.2.2.22): This element is required.

- **Until** (section 2.2.2.26): This element is optional.

- **Occurrences** (section 2.2.2.16): This element is optional.

- **Interval** (section 2.2.2.13): This element is optional.

- **DayOfWeek** (section 2.2.2.8): This element is optional.

- **DayOfMonth** (section 2.2.2.7): This element is optional.

- **WeekOfMonth** (section 2.2.2.29): This element is optional.

- **MonthOfYear** (section 2.2.2.15): This element is optional.

- **Regenerate** (section 2.2.2.18): This element is optional.

- **DeadOccur** (section 2.2.2.9): This element is optional.

- **CalendarType** (section 2.2.2.2): This element is optional.

- **IsLeapMonth** (section 2.2.2.14): This element is optional.

- **FirstDayOfWeek** (section 2.2.2.11): This element is required in server responses for weekly recurrences.

2.2.2.18 Regenerate

The **Regenerate** element is an optional child element of the **Recurrence** element (section 2.2.2.17) that specifies whether this task item regenerates after it is completed. It is defined as an element in the **Tasks** namespace.

The value of this element is an **unsignedbyte** data type, as specified in [MS-ASDTYPE] section 2.7.

A command request or response has a maximum of one **Regenerate** child element per **Recurrence** element.

When the **Regenerate** element is set to a nonzero value (up to and including 255), a valid **Interval** element (section 2.2.2.13) MUST be included as a child element of the **Recurrence** element. Valid patterns include Daily, Weekly, Monthly, and Yearly patterns.

If the **Regenerate** element is not included in a response, then the client MUST assume that the default value is 0 (zero) (do not regenerate).

2.2.2.19   ReminderSet

The **ReminderSet** element specifies whether a reminder for the task item has been set to appear. It is defined as an element in the **Tasks** namespace and is used in ActiveSync command requests and responses as specified in section 2.2.2.

The value of this element is an **unsignedbyte** data type, as specified in [MS-ASDTYPE] section 2.7.

The value of the **ReminderSet** element MUST be one of the following values.

Value	Meaning
0	False (no reminder is set) (Default)
1	True (a reminder is set)

If the **ReminderSet** element contains a value other than 0 (zero) or 1 in a command request, the server responds with a status value of 6 in the command response.

2.2.2.20   ReminderTime

The **ReminderTime** element specifies the time and date at which the reminder for the task item will appear. It is defined as an element in the **Tasks** namespace and is used in ActiveSync command requests and responses as specified in section 2.2.2.

The value of this element is a **dateTime** data type, as specified in [MS-ASDTYPE] section 2.3.

2.2.2.21   Sensitivity

The **Sensitivity** element specifies the sensitivity level of the task. It is defined as an element in the **Tasks** namespace and is used in ActiveSync command requests and responses as specified in section 2.2.2.

The value of this element is an **unsignedbyte** data type, as specified in [MS-ASDTYPE] section 2.7.

The value of the **Sensitivity** element MUST be one of the following values.

Value	Meaning
0	Normal
1	Personal
2	Private
3	Confidential

The default value of the **Sensitivity** element is 0 (zero) (normal).

2.2.2.22   Start

The **Start** element is a required child element of the **Recurrence** element (section 2.2.2.17) that specifies the local start date for the recurrence. It is defined as an element in the **Tasks** namespace.

A command request or response has a minimum of one **Start** child element per **Recurrence** element.

A command request or response has a maximum of one **Start** child element per **Recurrence** element.

If a client does not include this element in a **Sync** command request ([MS-ASCMD] section 2.2.2.19.1) whenever a **Recurrence** element is present, then the server MUST respond with status error 6. Status errors for the **Sync** command are specified in [MS-ASCMD] section 2.2.3.152.16.

The value of this element is a **dateTime** data type, as specified in [MS-ASDTYPE] section 2.3.

2.2.2.23 StartDate

The **StartDate** element specifies the local start date of the task item. It is defined as an element in the **Tasks** namespace and is used in ActiveSync command requests and responses as specified in section 2.2.2.

The value of this element is a **dateTime** data type, as specified in [MS-ASDTYPE] section 2.3.

2.2.2.24 Subject

The **Subject** element is an element that specifies the subject of the task item. It is defined as an element in the **Tasks** namespace.

The value of this element is a **string** data type, as specified in [MS-ASDTYPE] section 2.6.

The **Subject** element is an optional element in a **Sync** command request ([MS-ASCMD] section 2.2.2.19.1).

The **Subject** element is a required element in a **Sync** command response ([MS-ASCMD] section 2.2.2.19.2).

2.2.2.25 Type

The **Type** element is a required child element of the **Recurrence** element (section 2.2.2.17) that specifies the type of the recurrence item. It is defined as an element in the **Tasks** namespace.

A command request or response has a minimum of one **Type** child element per **Recurrence** element.

A command request or response has a maximum of one **Type** child element per **Recurrence** element.

If a client does not include this element in a **Sync** command request ([MS-ASCMD] section 2.2.2.19.1) whenever a **Recurrence** element is present, then the server MUST respond with status error 6. Status errors for the **Sync** command are specified in [MS-ASCMD] section 2.2.3.152.16.

The value of this element is an **unsignedbyte** data type, as specified in [MS-ASDTYPE] section 2.7.

The value of the **Type** element MUST be one of the following values.

Value	Meaning
0	Recurs daily.

Value	Meaning
1	Recurs weekly.
2	Recurs monthly.
3	Recurs monthly on the nth day.
5	Recurs yearly.
6	Recurs yearly on the nth day.

2.2.2.26   Until

The **Until** element is an optional child element of the **Recurrence** element (section 2.2.2.17) that specifies the end time of a series of recurrence items. It is defined as an element in the **Tasks** namespace.

A command request or response has a maximum of one **Until** child element per **Recurrence** element.

The **Occurrences** element (section 2.2.2.16) and the **Until** element are mutually exclusive. It is recommended that only one of these elements be included as a child element of the **Recurrence** element (section 2.2.2.17) in a **Sync** command request ([MS-ASCMD] section 2.2.2.19.1). If both elements are included, then the server MUST respect the value of the **Occurrences** element and ignore the **Until** element.

The value of this element is a **dateTime** data type, as specified in [MS-ASDTYPE] section 2.3.

2.2.2.27   UtcDueDate

The **UtcDueDate** element specifies the **UTC** due date of the task item. It is defined as an element in the **Tasks** namespace and is used in ActiveSync command requests and responses as specified in section 2.2.2.

The value of this element is a **dateTime** data type, as specified in [MS-ASDTYPE] section 2.3.

2.2.2.28   UtcStartDate

The **UtcStartDate** element specifies the UTC start date of the task item. It is defined as an element in the **Tasks** namespace and is used in ActiveSync command requests and responses as specified in section 2.2.2.

The value of this element is a **dateTime** data type, as specified in [MS-ASDTYPE] section 2.3.

2.2.2.29   WeekOfMonth

The **WeekOfMonth** element is an optional child element of the **Recurrence** element (section 2.2.2.17) that specifies the week of the month for the task recurrence. It is defined as an element in the **Tasks** namespace.

The value of this element is an **unsignedbyte** data type, as specified in [MS-ASDTYPE] section 2.7.

A command request or response has a minimum of one **WeekOfMonth** child element per **Recurrence** element when the value of the **Type** element (section 2.2.2.25) is either 3 or 6.

A command request or response has a maximum of one **WeekOfMonth** child element per **Recurrence** element.

The value of the **WeekOfMonth** element MUST be between 1 and 5. A value of 5 always designates the last week of the month.

The **WeekOfMonth** element MUST only be included in requests or responses when the **Type** element value is either 3 or 6. When a client request is issued with the **WeekOfMonth** element in other instances, the server responds with a status 6 error (conversion error).

3   Protocol Details

3.1   Client Details

3.1.1   Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This document does not mandate that implementations adhere to this model as long as their external behavior is consistent with that described in this document.

Task class: A structured XML text block that adheres to the XML schema definition specified in section 2.2. It is returned by the server to the client as part of a full XML response to the client command requests that are specified in section 3.1.5.

Command request: A WBXML-formatted message that adheres to the command schemas specified in [MS-ASCMD].

3.1.2   Timers

None.

3.1.3   Initialization

None.

3.1.4   Higher-Layer Triggered Events

3.1.4.1   Synchronizing Task Data Between Client and Server

A client initiates synchronization of **Task** class data with the server by sending a **Sync** command request ([MS-ASCMD] section 2.2.2.19.1) to the server.

3.1.4.2   Searching a Server for Task Data

A client searches for **Task** class data on the server by sending a **Search** command request ([MS-ASCMD] section 2.2.2.14.1) to the server.

3.1.4.3   Requesting Details for Specific Tasks

A client requests **Task** class data for one or more individual task items by sending an **ItemOperations** command request ([MS-ASCMD] section 2.2.2.8.2) to the server that contains one or more **itemoperations:Fetch** elements ([MS-ASCMD] section 2.2.3.60.1).

3.1.5   Message Processing Events and Sequencing Rules

The following sections specify how various elements of the **Task** class are used in the context of specific ActiveSync commands. Command details are specified in [MS-ASCMD].

3.1.5.1 ItemOperations Command Request

A client uses an **ItemOperations** command request ([MS-ASCMD] section 2.2.2.8.2) that contains one or more **itemoperations:Fetch** elements ([MS-ASCMD] section 2.2.3.60.1) to retrieve data from the server for one or more specific **Task** items.

The client can restrict the elements returned in the **ItemOperations** command response ([MS-ASCMD] section 2.2.2.8.3) by including the **airsyncbase:Attachments** element ([MS-ASAIRS] section 2.2.2.6) and the **airsyncbase:Body** element ([MS-ASAIRS] section 2.2.2.4) as child elements of the **itemoperations:Schema** element ([MS-ASCMD] section 2.2.3.135) in the **ItemOperations** command request.

For more details about the **ItemOperations** command, see [MS-ASCMD] section 2.2.2.8.

3.1.5.2 Search Command Request

A client uses the **Search** command request ([MS-ASCMD] section 2.2.2.14.1) to retrieve **Task** class items that match the criteria specified by the client.

Elements that belong to the **Task** class, as specified in section 2.2, MUST NOT be included in a **Search** command request.

For more details about the **Search** command, see [MS-ASCMD] section 2.2.2.14.

3.1.5.3 Sync Command Request

A client uses the **Sync** command request ([MS-ASCMD] section 2.2.2.19.1) to synchronize its **Task** class items for a specified user with the tasks currently stored by the server.

Any of the elements that belong to the **Task** class, as specified in section 2.2, can be included in a **Sync** command request.

Top-level **Task** class elements, as specified in section 2.2, MUST be transmitted as child elements of the **airsync:ApplicationData** element ([MS-ASCMD] section 2.2.3.10) within either an **airsync:Add** element ([MS-ASCMD] section 2.2.3.7.2) ([MS-ASCMD] section 2.2.3.7.2) or an **airsync:Change** element ([MS-ASCMD] section 2.2.3.23) ([MS-ASCMD] section 2.2.3.23).

For more details about the **Sync** command, see [MS-ASCMD] section 2.2.2.19.

3.1.6 Timer Events

None.

3.1.7 Other Local Events

None.

3.2 Server Details

3.2.1 Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This document does not mandate that implementations adhere to this model as long as their external behavior is consistent with that described in this document.

Task class: A structured XML text block that adheres to the XML schema definition specified in section 2.2. It is returned by the server to the client as part of a full XML response to the client command requests specified in section 3.1.5.

Command response: A WBXML-formatted message that adheres to the command schemas specified in [MS-ASCMD].

3.2.2 Timers

None.

3.2.3 Initialization

None.

3.2.4 Higher-Layer Triggered Events

3.2.4.1 Synchronizing Task Data Between Client and Server

Synchronization of **Task** class data between client and server is initiated by the client, as specified in section 3.1.4.1. The server responds with a **Sync** command response ([MS-ASCMD] section 2.2.2.19.2).

3.2.4.2 Searching for Task Data

Searching for **Task** class data is initiated by the client, as specified in section 3.1.4.2. The server responds with a **Search** command response ([MS-ASCMD] section 2.2.2.14.2).

3.2.4.3 Requesting Details for Specific Tasks

Retrieval of **Task** class data for one or more individual task items is initiated by the client, as specified in section 3.1.4.3. The server responds with an **ItemOperations** command response ([MS-ASCMD] section 2.2.2.8.3).

3.2.5 Message Processing Events and Sequencing Rules

The following sections specify how various elements of the **Task** class are used in the context of specific ActiveSync commands. Command details are specified in [MS-ASCMD].

3.2.5.1 ItemOperations Command Response

When a client uses an **ItemOperations** command request ([MS-ASCMD] section 2.2.2.8.2) to retrieve data from the server for one or more specific **Task** items, as specified in section 3.1.5.1, the server responds with an **ItemOperations** command response ([MS-ASCMD] section 2.2.2.8.3).

Any of the elements that belong to the **Task** class, as specified in section 2.2, can be included in an **ItemOperations** command response. If an **itemoperations:Schema** element ([MS-ASCMD] section 2.2.3.135) is included in the **ItemOperations** command request, then the elements returned in the **ItemOperations** command response MUST be restricted to the elements that were included as child elements of the **itemoperations:Schema** element in the command request.

Top-level **Task** class elements, as specified in section 2.2, MUST be returned as child elements of the **itemoperations:Properties** element ([MS-ASCMD] section 2.2.3.118) in the **ItemOperations** command response.

For more information about the **ItemOperations** command, see [MS-ASCMD] section 2.2.2.8.

3.2.5.2   Search Command Response

When a client uses the **Search** command request ([MS-ASCMD] section 2.2.2.14.1) to retrieve **Task** class items from the server that match the criteria specified by the client, as specified in section 3.1.5.2, the server responds with a **Search** command response ([MS-ASCMD] section 2.2.2.14.2).

Any of the elements that belong to the **Task** class, as specified in section 2.2, can be included in a **Search** command response.

Top-level **Task** class elements, as specified in section 2.2, are returned as child elements of the **search:Properties** element ([MS-ASCMD] section 2.2.3.118) in the **Search** command response.

If elements that belong to the **Task** class are included in a **Search** command request, the server MUST return a protocol error.

For more details about the **Search** command, see [MS-ASCMD] section 2.2.2.14.

3.2.5.3   Sync Command Response

When a client uses the **Sync** command request ([MS-ASCMD] section 2.2.2.19.1) to synchronize its **Task** class items for a specified user with the tasks currently stored by the server, as specified in section 3.1.5.3, the server responds with a **Sync** command response ([MS-ASCMD] section 2.2.2.19.2).

Any of the elements that belong to the **Task** class, as specified in section 2.2, can be included in a **Sync** command response.

Top-level **Task** class elements, as specified in section 2.2, are returned as child elements of the **airsync:ApplicationData** element ([MS-ASCMD] section 2.2.3.10) within either an **airsync:Add** element ([MS-ASCMD] section 2.2.3.7.2) or an **airsync:Change** element ([MS-ASCMD] section 2.2.3.23) in the **Sync** command response.

3.2.5.3.1   Importance Element

If the **Importance** element (section 2.2.2.12) is not included as a child element of the **airsync:Change** element in a **Sync** command request, the server MUST NOT delete the element from its **store**, but rather restore it to its default value (1, as specified in section 2.2.2.12).

3.2.5.3.2   ReminderSet Element

If the **ReminderSet** element (section 2.2.2.19) is not included as a child element of the **airsync:Change** element in a **Sync** command request, the server MUST NOT delete the element from its store, but rather restore it to its default value (0 (zero), as specified in section 2.2.2.19).

3.2.6   Timer Events

None.

3.2.7   Other Local Events

None.

4   Protocol Examples

4.1   Synchronizing Tasks Between Client and Server

The following example demonstrates a client request to create a new task on the server, and the server response. In this example, the client sends a **Sync** command request ([MS-ASCMD] section 2.2.2.19.1) to the server that contains information for a task that was created on the client, and the server responds with a **Sync** command response ([MS-ASCMD] section 2.2.2.19.2).

Request:

```
<?xml version="1.0" encoding="utf-8"?>
<Sync xmlns:tasks="Tasks:" xmlns:airsyncbase="AirSyncBase:" xmlns="AirSync:">
  <Collections>
    <Collection>
      <SyncKey>301865454</SyncKey>
      <CollectionId>11</CollectionId>
      <DeletesAsMoves>1</DeletesAsMoves>
      <GetChanges>1</GetChanges>
      <WindowSize>100</WindowSize>
      <Commands>
        <Add>
          <ClientId>4717a10e-492d-45af-9fe3-227f74385b13</ClientId>
          <ApplicationData>
            <airsyncbase:Body>
              <airsyncbase:Type>2</airsyncbase:Type>
              <airsyncbase:Data>&lt;strong&gt;Must&lt;/strong&gt; complete TPS reports using
the new cover sheet.</airsyncbase:Data>
            </airsyncbase:Body>
            <tasks:Subject>TPS Reports for August 2009</tasks:Subject>
            <tasks:Importance>2</tasks:Importance>
            <tasks:Categories>
              <tasks:Category>Business</tasks:Category>
              <tasks:Category>Reports</tasks:Category>
            </tasks:Categories>
            <tasks:Complete>0</tasks:Complete>
            <tasks:DueDate>2009-09-03T13:00:00.000Z</tasks:DueDate>
            <tasks:UtcDueDate>2009-09-03T20:00:00.000Z</tasks:UtcDueDate>
            <tasks:ReminderSet>1</tasks:ReminderSet>
            <tasks:ReminderTime>2009-09-02T09:00:00.000Z</tasks:ReminderTime>
            <tasks:Sensitivity>1</tasks:Sensitivity>
            <tasks:StartDate>2009-09-03T09:00:00.000Z</tasks:StartDate>
            <tasks:UtcStartDate>2009-09-03T16:00:00.000Z</tasks:UtcStartDate>
          </ApplicationData>
        </Add>
      </Commands>
    </Collection>
  </Collections>
</Sync>
```

Response:

```
<?xml version="1.0" encoding="utf-8"?>
<Sync xmlns="AirSync:">
  <Collections>
    <Collection>
```

```
            <SyncKey>1010751843</SyncKey>
            <CollectionId>11</CollectionId>
            <Status>1</Status>
            <Responses>
              <Add>
                <ClientId>4717a10e-492d-45af-9fe3-227f74385b13</ClientId>
                <ServerId>11:1</ServerId>
                <Status>1</Status>
              </Add>
            </Responses>
          </Collection>
        </Collections>
      </Sync>
```

4.2 Synchronizing Tasks on the Client

The following example demonstrates a client request to synchronize its task data with the server, and the server response. In this example, the client does not submit any changes in the **Sync** command request ([MS-ASCMD] section 2.2.2.19.1), and the server responds with a **Sync** command response ([MS-ASCMD] section 2.2.2.19.2) that includes three changes: a new task, a changed task, and a deleted task. Elements of the **Task** class are included in the **Sync** command response as child elements of the **airsync:ApplicationData** element ([MS-ASCMD] section 2.2.3.10) under an **airsync:Add** element ([MS-ASCMD] section 2.2.3.7.2), an **airsync:Change** element ([MS-ASCMD] section 2.2.3.23), and an **airsync:Delete** element ([MS-ASCMD] section 2.2.3.40.2).

Request:

```
<?xml version="1.0" encoding="utf-8"?>
<Sync xmlns="AirSync:">
  <Collections>
    <Collection>
      <SyncKey>761975125</SyncKey>
      <CollectionId>19</CollectionId>
      <DeletesAsMoves>1</DeletesAsMoves>
      <GetChanges>1</GetChanges>
      <WindowSize>100</WindowSize>
      <GetChanges/>
    </Collection>
  </Collections>
</Sync>
```

Response:

```
<?xml version="1.0" encoding="utf-8"?>
<Sync xmlns="AirSync:" xmlns:airsyncbase="AirSyncBase:" xmlns:tasks="Tasks:">
  <Collections>
    <Collection>
      <SyncKey>457669362</SyncKey>
      <CollectionId>19</CollectionId>
      <Status>1</Status>
      <Commands>
        <Change>
          <ServerId>19:1</ServerId>
          <ApplicationData>
```

```
        <airsyncbase:Body>
          <airsyncbase:Type>3</airsyncbase:Type>
          <airsyncbase:EstimatedDataSize>5731</airsyncbase:EstimatedDataSize>
          <airsyncbase:Truncated>1</airsyncbase:Truncated>
        </airsyncbase:Body>
        <tasks:Subject>Finish Q4 sales roll-up</tasks:Subject>
        <tasks:Importance>1</tasks:Importance>
        <tasks:UtcStartDate>2008-10-02T07:00:00.000Z</tasks:UtcStartDate>
        <tasks:StartDate>2008-10-02T00:00:00.000Z</tasks:StartDate>
        <tasks:UtcDueDate>2008-10-10T07:00:00.000Z</tasks:UtcDueDate>
        <tasks:DueDate>2008-10-10T00:00:00.000Z</tasks:DueDate>
        <tasks:Complete>0</tasks:Complete>
        <tasks:Sensitivity>0</tasks:Sensitivity>
        <tasks:ReminderTime>2008-10-10T19:30:00.000Z</tasks:ReminderTime>
        <tasks:ReminderSet>1</tasks:ReminderSet>
      </ApplicationData>
    </Change>
    <Add>
      <ServerId>19:3</ServerId>
      <ApplicationData>
        <airsyncbase:Body>
          <airsyncbase:Type>1</airsyncbase:Type>
          <airsyncbase:EstimatedDataSize>0</airsyncbase:EstimatedDataSize>
          <airsyncbase:Truncated>1</airsyncbase:Truncated>
        </airsyncbase:Body>
        <tasks:Subject>Email management team about next round of
quarterlies</tasks:Subject>
        <tasks:Importance>1</tasks:Importance>
        <tasks:UtcStartDate>2008-10-02T07:00:00.000Z</tasks:UtcStartDate>
        <tasks:StartDate>2008-10-02T00:00:00.000Z</tasks:StartDate>
        <tasks:UtcDueDate>2008-10-02T07:00:00.000Z</tasks:UtcDueDate>
        <tasks:DueDate>2008-10-02T00:00:00.000Z</tasks:DueDate>
        <tasks:Complete>0</tasks:Complete>
        <tasks:Sensitivity>0</tasks:Sensitivity>
        <tasks:ReminderSet>0</tasks:ReminderSet>
      </ApplicationData>
    </Add>
    <Delete>
      <ServerId>19:2</ServerId>
    </Delete>
  </Commands>
  </Collection>
  </Collections>
</Sync>
```

4.3 Fetching Task Data with the ItemOperations Command

The following example demonstrates a client request to retrieve information from the server for a particular task, and the server response. The client sends an **ItemOperations** command request ([MS-ASCMD] section 2.2.2.8.2) to the server, and the server responds with an **ItemOperations** command response ([MS-ASCMD] section 2.2.2.8.3). This example assumes that the server has assigned a Collection ID of 11 to the **Tasks** collection.

Request:

```
<?xml version="1.0" encoding="utf-8"?>
<ItemOperations xmlns:airsync="AirSync:"
```

```
  xmlns:airsyncbase="AirSyncBase:" xmlns="ItemOperations:">
    <Fetch>
      <Store>Mailbox</Store>
      <airsync:CollectionId>11</airsync:CollectionId>
      <airsync:ServerId>11:1</airsync:ServerId>
      <Options>
        <airsyncbase:BodyPreference>
          <airsyncbase:Type>1</airsyncbase:Type>
          <airsyncbase:TruncationSize>256</airsyncbase:TruncationSize>
          <airsyncbase:AllOrNone>0</airsyncbase:AllOrNone>
        </airsyncbase:BodyPreference>
      </Options>
    </Fetch>
  </ItemOperations>
```

Response:

```
<?xml version="1.0" encoding="utf-8"?>
<ItemOperations xmlns:airsync="AirSync:" xmlns:tasks="Tasks:"
xmlns:airsyncbase="AirSyncBase:" xmlns="ItemOperations:">
  <Status>1</Status>
  <Response>
    <Fetch>
      <Status>1</Status>
      <airsync:CollectionId>11</airsync:CollectionId>
      <airsync:ServerId>11:1</airsync:ServerId>
      <airsync:Class>Tasks</airsync:Class>
      <Properties>
        <airsyncbase:Body>
          <airsyncbase:Type>1</airsyncbase:Type>
          <airsyncbase:EstimatedDataSize>0</airsyncbase:EstimatedDataSize>
        </airsyncbase:Body>
        <tasks:Subject>Complete This Week's Test Run </tasks:Subject>
        <tasks:Importance>2</tasks:Importance>
        <tasks:UtcStartDate>2009-11-18T08:00:00.000Z</tasks:UtcStartDate>
        <tasks:StartDate>2009-11-18T00:00:00.000Z</tasks:StartDate>
        <tasks:UtcDueDate>2009-11-27T08:00:00.000Z</tasks:UtcDueDate>
        <tasks:DueDate>2009-11-27T00:00:00.000Z</tasks:DueDate>
        <tasks:Complete>0</tasks:Complete>
        <tasks:Sensitivity>2</tasks:Sensitivity>
        <tasks:ReminderTime>2009-11-27T16:00:00.000Z</tasks:ReminderTime>
        <tasks:ReminderSet>1</tasks:ReminderSet>
      </Properties>
    </Fetch>
  </Response>
</ItemOperations>
```

4.4   Searching for Tasks

The following example demonstrates a client request to find all tasks on the server that contain the word "Test". The client sends a **Search** command request ([MS-ASCMD] section 2.2.2.14.1) to the server, and the server responds with a **Search** command response ([MS-ASCMD] section 2.2.2.14.2). This example assumes that the server has assigned a Collection ID of 11 to the **Tasks** collection.

Request:

```xml
<?xml version="1.0" encoding="utf-8"?>
<Search xmlns="Search:" xmlns:airsync="AirSync:"
>
<Store>
  <Name>Mailbox</Name>
    <Query>
      <And>
        <airsync:Class>Tasks</airsync:Class>
        <airsync:CollectionId>11</airsync:CollectionId>
        <FreeText>Test</FreeText>
      </And>
    </Query>
    <Options>
      <RebuildResults />
      <Range>0-4</Range>
    </Options>
  </Store>
</Search>
```

Response:

```xml
<Search xmlns:A0="AirSync:" xmlns:tasks="Tasks:" xmlns:airsyncbase="AirSyncBase:"
xmlns="Search:">
  <Status>1 Success</Status>
  <Response>
    <Store>
      <Status>1 Success</Status>
      <Result>
        <A0:Class>Tasks</A0:Class>

<LongId>RgAAAADl9NP3UFJNRpgIYBWT6lSUBwDqXN0OYiDySoYnY1igrbIlAAAAAAAqAADqXN0OYiDySoYnY1igrbIlA
AAAAGHBAAAT</LongId>
        <A0:CollectionId>11</A0:CollectionId>
        <Properties>
          <airsyncbase:Body>
            <airsyncbase:Type>1</airsyncbase:Type>
            <airsyncbase:EstimatedDataSize>0</airsyncbase:EstimatedDataSize>
            <airsyncbase:Truncated>1</airsyncbase:Truncated>
          </airsyncbase:Body>
          <tasks:Subject>Complete This Week's Test Run </tasks:Subject>
          <tasks:Importance>2</tasks:Importance>
          <tasks:UtcStartDate>2009-11-18T08:00:00.000Z</tasks:UtcStartDate>
          <tasks:StartDate>2009-11-18T00:00:00.000Z</tasks:StartDate>
          <tasks:UtcDueDate>2009-11-27T08:00:00.000Z</tasks:UtcDueDate>
          <tasks:DueDate>2009-11-27T00:00:00.000Z</tasks:DueDate>
          <tasks:Complete>0</tasks:Complete>
          <tasks:Sensitivity>2</tasks:Sensitivity>
          <tasks:ReminderTime>2009-11-27T16:00:00.000Z</tasks:ReminderTime>
          <tasks:ReminderSet>1</tasks:ReminderSet>
        </Properties>
      </Result>
      <Range>0-0</Range>
      <Total>1</Total>
    </Store>
  </Response>
</Search>
```

5   Security

5.1   Security Considerations for Implementers

None.

5.2   Index of Security Parameters

None

6   Appendix A: Product Behavior

The information in this specification is applicable to the following Microsoft products or supplemental software. References to product versions include released service packs:

- Microsoft® Exchange Server 2007 Service Pack 1 (SP1)

- Microsoft® Exchange Server 2010

Exceptions, if any, are noted below. If a service pack or Quick Fix Engineering (QFE) number appears with the product version, behavior changed in that service pack or QFE. The new behavior also applies to subsequent service packs of the product unless otherwise specified. If a product edition appears with the product version, behavior is different in that product edition.

Unless otherwise specified, any statement of optional behavior in this specification that is prescribed using the terms SHOULD or SHOULD NOT implies product behavior in accordance with the SHOULD or SHOULD NOT prescription. Unless otherwise specified, the term MAY implies that the product does not follow the prescription.

<1> Section 2.2.2.2: The **CalendarType** element is not supported when the value of the MS-ASProtocolVersion header is set to 12.1.

<2> Section 2.2.2.11: The **FirstDayOfWeek** element is not supported when the MS-ASProtocolVersion header is set to 12.1 or 14.0.

<3> Section 2.2.2.14: The **IsLeapMonth** element is not supported when the value of the MS-ASProtocolVersion header is set to 12.1.

7   Change Tracking

This section identifies changes that were made to the [MS-ASTASK] protocol document between the March 2011 and August 2011 releases. Changes are classified as New, Major, Minor, Editorial, or No change.

The revision class **New** means that a new document is being released.

The revision class **Major** means that the technical content in the document was significantly revised. Major changes affect protocol interoperability or implementation. Examples of major changes are:

- A document revision that incorporates changes to interoperability requirements or functionality.

- An extensive rewrite, addition, or deletion of major portions of content.

- The removal of a document from the documentation set.

- Changes made for template compliance.

The revision class **Minor** means that the meaning of the technical content was clarified. Minor changes do not affect protocol interoperability or implementation. Examples of minor changes are updates to clarify ambiguity at the sentence, paragraph, or table level.

The revision class **Editorial** means that the language and formatting in the technical content was changed. Editorial changes apply to grammatical, formatting, and style issues.

The revision class **No change** means that no new technical or language changes were introduced. The technical content of the document is identical to the last released version, but minor editorial and formatting changes, as well as updates to the header and footer information, and to the revision summary, may have been made.

Major and minor changes can be described further using the following change types:

- New content added.

- Content updated.

- Content removed.

- New product behavior note added.

- Product behavior note updated.

- Product behavior note removed.

- New protocol syntax added.

- Protocol syntax updated.

- Protocol syntax removed.

- New content added due to protocol revision.

- Content updated due to protocol revision.

- Content removed due to protocol revision.

- New protocol syntax added due to protocol revision.

- Protocol syntax updated due to protocol revision.

- Protocol syntax removed due to protocol revision.

- New content added for template compliance.

- Content updated for template compliance.

- Content removed for template compliance.

- Obsolete document removed.

Editorial changes are always classified with the change type **Editorially updated.**

Some important terms used in the change type descriptions are defined as follows:

- **Protocol syntax** refers to data elements (such as packets, structures, enumerations, and methods) as well as interfaces.

- **Protocol revision** refers to changes made to a protocol that affect the bits that are sent over the wire.

The changes made to this document are listed in the following table. For more information, please contact protocol@microsoft.com.

Section	Tracking number (if applicable) and description	Major change (Y or N)	Change type
1 Introduction	Revised the introductory paragraph to state the purpose of the protocol.	N	Content updated.
1 Introduction	Added information about which sections of the specification are normative and which sections are informative.	Y	Content updated for template compliance.
1.3 Overview	Added information about when task data is included in command requests and responses.	N	Content updated.
1.4 Relationship to Other Protocols	Added information about this protocol's relationship to [MS-ASWBXML].	N	New content added.
1.4 Relationship to Other Protocols	Added information to describe additional ways that [MS-ASCMD] relates to this protocol.	N	New content added.
1.6 Applicability Statement	Replaced "set of elements" with "set of XML elements".	N	Content updated.
2.1 Transport	Revised first paragraph to focus on the ActiveSync Tasks Class Protocol instead of the Task class.	N	Content updated.
2.1 Transport	Removed information about parent elements of Task class elements.	N	Content removed.
2.1	Moved information about WBXML from the	N	New content

Section	Tracking number (if applicable) and description	Major change (Y or N)	Change type
Transport	Message Syntax section.		added.
2.1 Transport	Moved information about the namespaces in which Task class elements are defined to the Elements section.	N	Content removed.
2.2 Message Syntax	Moved information about WBXML to the Transport section.	N	Content removed.
2.2 Message Syntax	Added information to specify what the protocol defines.	N	New content added.
2.2 Message Syntax	Updated the XML schema for the Task class to specify that the Category element is optional and can appear a maximum of 300 times within a Categories element.	Y	Content updated.
2.2.1 Namespaces	Changed the value of Prefix for the Tasks Namespace URI from "None" to "(none)".	N	Content updated.
2.2.2 Elements	Revised the structure of subsections within the Elements section to remove the namespace prefix from element names in section titles and reorganize the subsections alphabetically.	N	Content updated.
2.2.2 Elements	Moved information about namespaces in which Task class elements are defined from the Transport section.	N	New content added.
2.2.2 Elements	Added information to identify top-level Task class elements and to specify how top-level task class elements are used in ActiveSync command requests and responses.	Y	New content added.
2.2.2 Elements	Added specific section references for elements.	N	Content updated.
2.2.2 Elements	Updated the description of the airsyncbase:Body element, the Category element, and the DateCompleted element.	N	Content updated.
2.2.2 Elements	Added information about element data type to each subsection within the Elements section (where necessary).	Y	New content added.
2.2.2 Elements	Updated subsections (for top-level Task class elements) within the Elements section to include a reference to the Elements section for details about how the element is used in ActiveSync commands.	N	Content updated.
2.2.2 Elements	Added information about the namespace in which the element is defined to each subsection within the Elements section (where necessary).	N	Content updated.
2.2.2.2 CalendarType	Moved information about unsupported CalendarType element values from the Product	N	Product behavior note

Section	Tracking number (if applicable) and description	Major change (Y or N)	Change type
	Behavior section into the CalendarType section.		removed.
2.2.2.3 Categories	Updated content to specify that the Category element is an optional child element of the Categories element.	Y	Content updated.
2.2.2.8 DayOfWeek	Updated content to specify further information about when the DayOfWeek element is a required child element of the Recurrence element.	Y	Content updated.
2.2.2.9 DeadOccur	Changed the normative language used to specify requirements for setting the element value to mark a task complete.	Y	Content updated.
2.2.2.9 DeadOccur	Changed the term "recurring master task" to "recurring task".	N	Content updated.
2.2.2.12 Importance	Added information to specify outcome of setting the element to a value that is not specified as an allowed value.	N	New content added.
2.2.2.12 Importance	Changed the normative language used to introduce the allowed values for the element.	Y	Content updated.
2.2.2.19 ReminderSet	Added information to specify outcome of setting the element to a value that is not specified as an allowed value.	N	New content added.
3.1.4.1 Synchronizing Task Data Between Client and Server	Removed the link to the glossary from the word "synchronization".	N	Content updated.
3.1.4.1 Synchronizing Task Data Between Client and Server	Added section reference for the Sync command request.	N	Content updated.
3.1.4.1 Synchronizing Task Data Between Client and Server	Changed section title from Synchronizing Task Data with a Server to Synchronizing Task Data Between Client and Server.	N	Content updated.
3.1.4.2 Searching a Server for Task Data	Added section reference for the Search command request.	N	Content updated.
3.1.4.3 Requesting Details for Specific Tasks	Revised sentence structure and added specific section references for commands and elements.	N	Content updated.
3.1.4.3 Requesting Details for Specific Tasks	Changed section title from Requesting Details for One or More Specific Tasks to Requesting Details for Specific Tasks.	N	Content updated.
3.1.5.1	Revised sentence structure and added specific	N	Content

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Section	Tracking number (if applicable) and description	Major change (Y or N)	Change type
ItemOperations Command Request	section references for commands and elements.		updated.
3.1.5.1 ItemOperations Command Request	Revised content to eliminate use of the phrase "top-level schema elements".	N	Content updated.
3.1.5.2 Search Command Request	Revised sentence structure and added specific section references for the Search command.	N	Content updated.
3.1.5.2 Search Command Request	Moved information about the server response to Task class elements in the Search command request to the Search Command Response section.	N	Content removed.
3.1.5.3 Sync Command Request	Revised sentence structure and added specific section references for commands and elements.	N	Content updated.
3.1.5.3 Sync Command Request	Updated content to specify that "top-level Task class elements" are transmitted as child elements of the airsync:ApplicationData element.	N	Content updated.
3.2.4.1 Synchronizing Task Data Between Client and Server	Added specific section references for commands.	N	Content updated.
3.2.4.1 Synchronizing Task Data Between Client and Server	Changed section title from Synchronizing Task Data with a Server to Synchronizing Task Data Between Client and Server.	N	Content updated.
3.2.4.1 Synchronizing Task Data Between Client and Server	Replaced details about client behavior with a reference to the Synchronizing Task Data Between Client and Server section.	N	Content updated.
3.2.4.2 Searching for Task Data	Added specific section references for commands.	N	Content updated.
3.2.4.2 Searching for Task Data	Changed section title from Searching a Server for Task Data to Searching for Task Data.	N	Content updated.
3.2.4.2 Searching for Task Data	Replaced details about client behavior with a reference to the Searching a Server for Task Data section.	N	Content updated.
3.2.4.3 Requesting Details for Specific Tasks	Revised sentence structure and added specific section references for commands and elements.	N	Content updated.
3.2.4.3 Requesting Details	Changed section title from Requesting Details for One or More Specific Tasks to Requesting Details	N	Content updated.

Section	Tracking number (if applicable) and description	Major change (Y or N)	Change type
for Specific Tasks	for Specific Tasks.		
3.2.4.3 Requesting Details for Specific Tasks	Replaced details about client behavior with a reference to the Requesting Details for Specific Tasks section.	N	Content updated.
3.2.5.1 ItemOperations Command Response	Added information about the server response.	N	New content added.
3.2.5.1 ItemOperations Command Response	Revised sentence structure and added specific section references for commands and elements.	N	Content updated.
3.2.5.1 ItemOperations Command Response	Updated content to reflect that the Schema element is defined in the ItemOperations namespace.	N	Content updated.
3.2.5.1 ItemOperations Command Response	Updated content to specify that "top-level Task class elements" are transmitted as child elements of the itemOperations:Properties element.	N	Content updated.
3.2.5.1 ItemOperations Command Response	Replaced details about client behavior with a reference to the ItemOperations Command Request section.	N	Content updated.
3.2.5.2 Search Command Response	Moved information about the server response to Task class elements in the Search command request from the Search Command Request section.	N	New content added.
3.2.5.2 Search Command Response	Added information about the server response.	N	New content added.
3.2.5.2 Search Command Response	Revised sentence structure and added specific section references for commands and elements.	N	Content updated.
3.2.5.2 Search Command Response	Updated content to specify that "top-level Task class elements" are transmitted as child elements of the search:Properties element.	N	Content updated.
3.2.5.2 Search Command Response	Added a reference to the Search Command Request section for details about the client request.	N	Content updated.
3.2.5.3 Sync Command Response	Added information about the server response.	N	New content added.
3.2.5.3 Sync Command Response	Revised sentence structure and added specific section references for commands and elements.	N	Content updated.
3.2.5.3	Updated content to specify that "top-level Task	N	Content

Section	Tracking number (if applicable) and description	Major change (Y or N)	Change type
Sync Command Response	class elements" are transmitted as child elements of the airsync:ApplicationData element.		updated.
3.2.5.3 Sync Command Response	Added a reference to the Sync Command Request section for details about the client request.	N	Content updated.
3.2.5.3.1 Importance Element	Updated content to specify the default value and add a link to the section that defines the default value.	N	Content updated.
3.2.5.3.2 ReminderSet Element	Updated content to specify the default value and add a link to the section that defines the default value.	N	Content updated.
4.1 Synchronizing Tasks Between Client and Server	Updated the introductory paragraph to better describe the example and removed the header from the request and response examples.	N	Content updated.
4.2 Synchronizing Tasks on the Client	Updated the introductory paragraph to better describe the example.	N	Content updated.
4.2 Synchronizing Tasks on the Client	Updated content to specify that Task class elements are child elements of the airsync:ApplicationData in the server response.	N	Content updated.
4.3 Fetching Task Data with the ItemOperations Command	Updated the introductory paragraph to better describe the example and removed the header from the request and response examples.	N	Content updated.
4.4 Searching for Tasks	Updated the introductory paragraph to better describe the example and removed the header from the request and response examples.	N	Content updated.
4.4 Searching for Tasks	Updated the response XML to specify that the namespace prefix "tasks" corresponds to the namespace "Tasks".	N	Content updated.
6 Appendix A: Product Behavior	Removed Exchange Server 2010 Service Pack 1 from the list of applicable products.	N	Content removed.

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8 Index

References